

REMARKS

Reconsideration and withdrawal of the rejection and the allowance of all claims now pending in the above-identified patent application (*i.e.*, Claims 28-42) are respectfully requested in view of the foregoing amendments and the following remarks.

At the outset, it should be recalled that the presently claimed invention provides a packaging apparatus, which may be utilized for the packaging of various types of goods, such as foods, which involve a large number of processes (*e.g.*, feeding the packaging material or container, filling the container, closing the container and labeling the packaged goods) and which must be carefully coordinated with one another. Each of these process packaging steps, in turn, is subdivided into a large number of individual steps which are required to take place synchronously with one another.

The present invention for a packaging apparatus, as claimed, is equipped with sensors, actuators and a drive system, having a servo motor, a central control unit and a system for data transmission. The actual values of the sensors, actuators and the drive system are recorded, in digital form, in each case, and transferred, with the use of a transmission protocol, via the data transmission system to the central control unit. The central control unit evaluates the data and determines setpoint values or control commands based upon measurements of actual values of the drive system taken for a plurality of cycles, which are transmitted, in digital form, from the control unit by the data transmission system to the actuator or drive system. The data transmission between the sensors, actuators, drive system and the central control unit takes place wirelessly and the

transmission protocol operates cyclically and with short cycle times, preferably in millisecond pulses.

In contrast to the prior art, the transmission protocol serves for synchronization of all sensors, actuators and drives, prepares the actual values and the determined setpoint data of all drives in each cycle, with the accuracy of the synchronization being in the microsecond range. The transmission protocol of the invention maintains essential information redundantly and eliminates errors in data transmission, preferably by the HDLC procedure.

As will be explained in greater detail hereinafter, nowhere in the prior art is such a novel and efficient packaging machine, useful for packaging containers, such as a multiplicity of food boxes and jars, for which the accuracy of the time synchronization is in the microsecond range, either disclosed or suggested and, further, that the currently pending set of claims are respectfully submitted to be in condition for allowance at this time.

By the present amendment, Applicants have amended independent Claim 28 (and all remaining claims via dependency) to clarify that the means for determining setpoint values or control commands for the drive system is based upon “measurements of said actual values of said drive system taken for a plurality of cycles.” Subject matter support for this claim amendment can be found in Applicants’ *Specification* at Page 5, line 26 – Page 6, line 6. Such a feature is submitted to further distinguish Applicants’ invention over the prior art and, in the third Office Action (at 5), the Examiner had pointed out that Applicants’ prior argument for patentability, which discussed this feature of the claimed

invention, was required to be stated within the claims to be accorded patentable weight.

As part of the third Office Action, the Examiner has now rejected Claims 28-42, pursuant to 35 U.S.C. §112, first paragraph, on the contention that the synchronization of sensors, actuators and drive systems “in the microsecond range,” which Applicants have contended is not taught or suggested by the Jeremy Elson publications made of record by the Examiner, is not sufficiently disclosed by Applicants and, implicitly, not otherwise possible.

In reply to the Examiner’s 35 U.S.C. §112, first paragraph, lack of enablement rejection, Applicants are concurrently filing a publication entitled “SERCOS Interface,” which discusses the synchronization of drive systems and that such synchronization means, which may be used for achieving the results discussed in Applicants’ *Specification* and practicing the invention as claimed, have been known since at least August 1998. The existence and availability of synchronization means sufficient for allowing those skilled in the art to practice the claimed invention, it is respectfully submitted, is sufficient for enabling Applicants’ *Specification* and for overcoming the Examiner’s 35 U.S.C. §112, first paragraph, rejection of Claims 28-42. *See, Amgen Inc. Hoeschst Marion Roussel Inc.*, 314 F.3d 1313, 65 USPQ2d 1385, 1400 (Fed. Cir. 2003) (“The specification need not explicitly teach those in the art to make and use the invention; the requirement is satisfied if, given what they already know, the specification teaches those in the art enough that they can make and use the invention without ‘undue experimentation.’”); *Genentech, Inc. v. Novo Nordisk, A/S*, 108 F.3d 1361, 1365, 42 USPQ2d 1001,

1004 (Fed. Cir. 1997); *In re Vaeck*, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991).

In light of the accompanying “SERCOS Interface” publication, which explains the existence of synchronization means dating back to 1998, which are useful for practicing the presently claimed invention, it is respectfully contended that the Examiner’s 35 U.S.C. §112, first paragraph, non-enablement rejection of the first Office Action has been overcome and should now be properly withdrawn.

Turning now, in detail, to the Examiner’s prior art rejection, in the third Office Action the Examiner has again rejected Applicants’ independent Claim 28 (and various dependent claims) as being obvious, pursuant to 35 U.S.C. §103(a), over Johnson, U.S. Patent No. 6,788,980, taken in view of both J. Elson *et al.*, “Time Synchronization for Wireless Sensor Networks,” *International Parallel and Distributed Processing Symposium* (April 2001) and Jerney. Elson, “Time Synchronization in Wireless Sensor Networks,” *Dissertation by Jeremy Elson*. It is the Examiner’s contention that the primarily-applied reference of Johnson discloses a packaging machine comprising essentially all of the structural elements, as recited in Applicants’ independent claim, including means for data transmission to a plurality of sensors or a drive system; means for evaluating data received by a central control unit from the plurality of sensors; and means for eliminating errors by use of redundancy in the means for data transmission and the means for transmission in a digital format. The Examiner has acknowledged, however, that Johnson does not show a transmission protocol for the wireless transmission

means operating cyclically with short cycle times and performing a synchronization of the plurality of sensors, the plurality of actuators and the drive system with time-dependent action and further providing the actual values and the setpoint values, or control commands, for the drive system in each cycle and accuracy of the synchronization in a microsecond range.

The Examiner has, therefore, secondarily applied two documents authored (at least in part) by Jeremy Elson for the proposition that research done on time synchronization in wireless sensor/actuator networks, which provide data at each cycle, purportedly show that such time synchronization is “capable of precision on the order of 1 microsecond.”

The Examiner has, therefore, concluded that it would have been obvious for one skilled in the art to have used the “concepts” presented in the Elson documents to improve the time synchronization of the packaging apparatus, as disclosed by Johnson, from the 50-millisecond range into the microsecond range, thereby arriving at that which is now claimed by the present Applicants.

In reply to the Examiner’s obviousness rejection of the third Office Action, Applicants have reviewed the Examiner’s contention that the Jeremy Elson dissertation was allegedly available to the public, and would constitute a “printed publication,” at least as early as May 30, 2003, based upon a website link to the dissertation provided on the personal homepage of Jeremy Elson. The dissertation itself does not include this May 2003 publication date and Applicants’ objection to the citation of the Elson dissertation

as constituting “prior” art is therefore maintained by Applicants.

Further, even if the Jeremy Elson dissertation was posted on the personal homepage of Dr. Elson as of May 30, 2003, it is nevertheless unclear whether the Elson dissertation was “publicly accessible,” SRI International Inc. v. Internet Security Systems Inc., 511 F.3d 1186, 85 USPQ2d 1489, 1495 (Fed. Cir. 2008), citing Bruckelmyer v. Ground Heaters, Inc., 445 F.3d 1374, 1378, 78 USPQ2d 1684, 1687 (Fed. Cir. 2006) (“A given reference is ‘publicly accessible’ upon a satisfactory showing that such document has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence, can locate it.”). The widespread use of the Internet does not alter the essential case law requiring “public accessibility” as a prerequisite for holding that a potential reference qualifies as a “printed publication” and is therefore “prior art.”

The existence of a website that makes “available” a potential reference is not, ipso facto, a “printed publication,” as the Examiner would appear to contend in the third Office Action. In SRI International, the Federal Circuit reversed the grant of summary judgment, issued upon a finding by a district court that material available on a website was sufficiently categorized so that it could be found by those skilled in the art and therefore “publicly accessible” as a “printed publication.” The Court in SRI International held that the issue of whether the requirement of “public accessibility” existed was a disputed issue of material of fact that could not, at such time, be resolved on summary judgment, and therefore remanded for further proceedings. Nevertheless, the Federal

Circuit in SRI International stated that on the basis of the “current record,” the “Live Traffic” reference appeared to be “non-accessible” because it was “not catalogued or indexed in a meaningful way and not intended for dissemination to the public.” SRI International Inc. v. Internet Security Systems Inc., *supra*, 85 USPQ2d at 1497.

It is unknown whether the Jeremy Elson dissertation was “catalogued or indexed in a meaningful way.” The Jeremy Elson dissertation does appear to be posted on the homepage of Dr. Elson, however, the existence of a document posted on the Internet, as was the case in SRI International, does not, as the case law so indicates, establish in and of itself that the document was “intended for dissemination to the public.” Consequently, the instant Applicants maintain their legal position that the Jeremy Elson dissertation, regardless of its “prior art” date, is not “publicly accessible” and is therefore not citable as a “printed publication” and prior art under 35 U.S.C. §§102 or 103 against the claims of the present Applicants, and the 35 U.S.C. §103(a) obviousness rejection should therefore be withdrawn for this reason.

Assuming, *arguendo*, that the Examiner could properly rely upon the Jeremy Elson documents made of record by the Examiner to support an obviousness rejection of Applicants’ claims, the Examiner’s application of the Elson citations is respectfully submitted to be erroneous: The one-microsecond precision discussed in J. Elson *et al.*, and cited by the Examiner for applying the Elson publications, was achieved during laboratory conditions which cannot be considering realistic working conditions and which are submitted to not be readily reproducible. More particularly, J. Elson *et al.*

states (at 5-6) that:

“All of these results, while encouraging, do come with a number of caveats. Our experiments results were performed under idealized laboratory conditions, using (equal-length) cables to directly connect the sender to the receivers. ***Real world conditions will require wireless links that are likely far more complex with more opportunities for variable delay.*** In addition, the relatively constant ambient temperature reduced the oscillators’ frequency drift over time. A real sensor network deployed outdoors might not be able let NTP free-run without an external time source for as long as we did in our experiment.”

(***Emphasis*** added)

In order to be applied against a claim, “a prior art reference must also be enabling, such that one of ordinary skill in the art could practice the invention without undue experimentation.” *Novo Nordisk Pharmaceuticals Inc. v. Bio-Technology General Corp.*, 424 F.3d 1347, 1355, 76 USPQ2d 1811, 1816 (Fed. Cir. 2005). The J. Elson *et al.* publication makes clear that the “microsecond range,” the purpose for this citation by the Examiner in concluding that the pending claims are obvious over the prior art, is not readily reproducible under “[r]eal world conditions” and, absent wireless links that are “far more complex” than those discussed in the cited publication, “more opportunities for variable delay” can be expected. Further, under the idealized experimental conditions discussed in J. Elson *et al.*, it is clear that no means would have to be undertaken for eliminating errors from data transmission.

The experimental results achieved and reported by J. Elson *et al.* can only be described as extraordinary and not readily capable of duplication under practical working conditions by those of ordinary skill in the art without “undue experimentation,” which would require, as stated in J. Elson *et al.*, wireless links that are “far more complex.”

Accordingly, the J. Elson *et al.* publication cannot reasonably be considered an enabling reference that can be properly combined with the primarily-applied reference of Johnson, and the Elson dissertation is submitted to be merely cumulative of the J. Elson *et al.* publication, even if the Elson dissertation was properly citable.

Further, it should be observed that J. Elson *et al.* is working with a sensor network, whereas the present Applicants claim a network that includes additional drive systems (*e.g.*, servo motors) and actuators, which form a specialized type of drive system, as part of a packaging machine. In this regard, the reading of sensor data is inherently fast, because only one single cycle is necessary.

In contrast to that disclosed and suggested by J. Elson *et al.*, even if properly enabling as a reference, the capability of controlling a drive and related means requires several cycles (at a minimum, two cycles); a distinction which is now explicitly recited in newly-amended independent Claim 28. In the initial cycle, the actual value of the drive is read and sent to the central control unit. At the central control unit, the actual value is compared with the determined set point value. Generally, there is a difference between both values with the result that, in the next cycle, a newly determined set point value is transferred to the drive. One skilled in the art of control techniques would be expected to be aware that the first cycle's "reading the actual value," plus the second cycle "delivering the determined set point value" (*i.e.*, control command value), is not sufficient data for making the actual value equal to the determined set point value. As a general rule, at least five cycles would be required for accomplishing this task.

Applicants' invention, as now most broadly recited by pending independent Claim 28, requires an accuracy of the synchronization of the drive system in each cycle within the range of one microsecond, which is contended to be properly enabled. This level of accuracy requires a time limit of 0.2 micro-seconds (for five cycles) for reading the actual position of the drive.

In contrast to that which is being claimed by Applicants, the J. Elson *et al.* publication is describing networks for sensors – not drives! Further, the applied combination of Johnson, taken in view of J. Elson *et al.*, fails to disclose or suggest a drive controlled by specifying position data at associated points in time via a wireless communication by RF, broad bands radio and infrared. The prior art, it is respectfully contended, provides no hint of controlling a drive with the accuracy to the level of one microsecond.

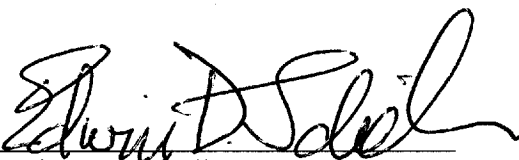
In light of the foregoing, withdrawal of the 35 U.S.C. §103(a) obviousness rejection of the third Office Action, which applies Johnson, taken in view of either, or both, Elson documents, is respectfully requested.

In view of the foregoing, it is respectfully contended that all claims now pending in the above-identified patent application (*i.e.*, Claims 28-42) recite a novel and efficient packaging machine, useful for packaging containers, such as a multiplicity of food boxes and jars, for which the accuracy of the time synchronization is in the microsecond range, which is patentably distinguishable over the prior art. Accordingly, withdrawal of the

outstanding rejection and the allowance of all claims now pending are respectfully requested and earnestly solicited.

Respectfully submitted,

ERWIN FERTIG/THOMAS CORD

By 
Edwin D. Schindler
Attorney for Applicants
Reg. No. 31,459

PTO Customer No. 60333

Five Hirsch Avenue
P. O. Box 966
Coram, New York 11727-0966

(631)474-5373

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- Enc.: 1. Petition for Three-Month Extension of Time for Response;
2. "SERCOS Interface" article; and,
3. EFT for \$525.00 (Three-Month Extension Fee).

The Commissioner for Patents is hereby authorized to charge the Deposit Account of Applicant's Attorney (*Account No. 19-0450*) for any fees or costs pertaining to the prosecution of the above-identified patent application, but which have not otherwise been provided for.